

Roads Analysis Addendum

Chugach National Forest

September, 2015

Background

This addendum serves as an update to the 2002 Roads Analysis and Access Management Plan done as part of the Forest Plan Revision in 2002, and included as Appendix B in the 2002 Revised Land and Resource Management Plan of the Chugach National Forest. It was prepared in accordance with 36 CFR 212.5 (2005 Travel Management Rule) subpart A, and with the Travel Analysis Process (TAP) described in Chapter 20 of Forest Service Handbook (FSH) 7709.55.

In 2002 the Chugach National Forest (CNF) completed a Road Analysis Report, which fulfilled the requirements of the 2001 National Forest System Road Management Rule. In 2005 the Road Management Rule was updated to include requirements for the designation of motor vehicle use on roads, trails and areas, and authorized the regulation of over-snow vehicle use. The 2005 Travel Management Rule kept the original requirements for the identification of National Forest Road Systems.

Subpart A of the 2005 Travel Management Rule requires each unit to:

- Identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of NFS lands; (36 CFR 212.5(b)(1)) and
- Identify the roads on lands under Forest Service jurisdiction that are no longer needed to meet forest resource management objectives; (36 CFR 212.5(b)(2))

In 2012 the Deputy Chief of the Forest Service issued a letter of direction requiring all units in the Forest Service to complete a science-based travel analysis process by the end of fiscal year 2015. The Travel Analysis Process is a key step towards identifying the minimum roads system requirement of Subpart A of the rule. Results of the science-based travel analysis are used to inform NEPA decisions that identify the minimum road system and complete the requirements of Subpart A.

The 2002 Roads Analysis Report addressed roads of all maintenance levels under Forest Service jurisdiction on the Chugach National Forest. The 2012 letter of direction recognizes that completion of a Roads Analysis in accordance with FS-643, “*Roads Analysis: Informing Decisions about Managing the National Forest Transportation System*”, satisfies the science-based Travel Analysis requirement of Subpart A, (FSM 7712.4(1)- Travel Analysis). However, the 2012 letter of direction asks that an appropriate line officer review the prior report to assess the adequacy and relevance of the analysis for compliance with Subpart A.

In 2015, a review of the 2002 Roads Analysis Report was performed and determined that the financial analysis section of the original report should be updated to better reflect current budget trends on the forest. This 2015 addendum includes an updated financial analysis that incorporates the recommended changes for the subset of roads considered in this addendum, and the current management recommendation for the roads evaluated in 2002.

This roads analysis addendum is NOT a decision-making process. It identifies problem areas and opportunities in the road system so that Forest Service land managers can make informed management decisions regarding the transportation system on National Forest System lands.

Financial Analysis

In order to capture the financial situation of road maintenance for the CNF, the forest examined the forest road maintenance budget for Fiscal Years 2011 - 2015. This budget was then compared with the maintenance costs associated with the Minimum Road System identified in 2002 as budgets for road maintenance have dropped considerably since then. The updated financial analysis reflects the current budget situation.

Road Maintenance Budget

Forest Service road budgets have been steadily declining in recent years. The CNF currently and in the recent past has no timber program and so the entire road program funding comes from appropriated funds. As appropriated funds have decreased, so has the amount of maintenance and the degree of user comfort has also been impacted. Current levels of funding for road work on the CNF are shown below in Table 1.

Table 1. Average Annual Maintenance Budget

Chugach NF - 5 Year Average Budget								
BLI	Forest Operational Budget (x1000)					5 Year Average	2015 % to Rd Mtc	Average Mtc Budget
	2011	2012	2013	2014	2015			
CMRD	452	428	351	429	282	324	100%	\$324
CMLG	0	120	0	50	70	48	50%	\$24
							Total	\$348
5YR Ave Mtc Budget	Range		Amount from appropriated funds:					
	-20%	+20%						
	\$348	\$278	\$417					

In addition to the analysis of benefits and risks of the road system, road analysis also includes a broad-scale Forest evaluation of the general affordability of the road system. The purpose of this analysis is to ensure that the National Forest road system reflects long-term funding expectations for the average annual cost of routine road maintenance.

Maintenance costs vary according to factors such as maintenance level, surface type, road gradient, and topography.

Road Maintenance Levels

The Forest Service differentiates forest roads into five maintenance levels, which define the level of service, and maintenance required.

Road Maintenance Level 5 (ML5) – roads are managed and maintained for a high degree of user comfort. These roads are generally paved and are suitable for passenger vehicles.

Road Maintenance Level (ML 4) – roads are managed and maintained for a moderate degree of user comfort. These roads are generally paved, but sometimes may be surfaced with stabilized aggregate surfacing and are suitable for passenger vehicles.

Road Maintenance Level (ML3) – roads are managed and maintained for a moderate degree of user comfort. These roads are generally gravel surfaced and are suitable for passenger vehicles.

Road Maintenance Level 2 (ML2) – roads are managed and maintained for use by high-clearance vehicles; passenger car traffic is not a consideration.

Road Maintenance Level 1 (ML1) – roads are kept on the transportation system for intermittent project uses and are closed to vehicular traffic between projects. The closure period must exceed 1 year for the road to be ML 1 status.

Road Maintenance Costs

Average annual cost of routine road maintenance is defined as the average yearly need for basic road maintenance. This includes clearing fallen trees, drainage maintenance, erosion control, blading, brushing, traffic signs, etc. It does not include cyclical replacement costs (such as bridge replacement every 50 years, asphalt overlays, etc.), which are covered by funding beyond the individual NFS unit budgets. Table 3 shows the breakdown of annual maintenance costs per mile for each of the five maintenance levels.

Table 3. Annual Routine Maintenance Costs per Mile

Maintenance Level	Road Surface Type	Annual Cost/Mile
5	Asphalt	\$25,000
4	Asphalt	\$18,300
3	Aggregate	\$6,275
2	Aggregate	\$3,650
1	Native/Aggregate	\$275

The costs in Table 3 above were developed using historical data from road maintenance contracts. Maintenance Level (ML) 1 roads have the lowest maintenance cost per mile. ML 4-5 roads that have an asphalt surface have the highest annual maintenance cost.

Decommissioning has the greatest cost per mile. The cost of decommissioning will vary depending on site specific conditions such as stream crossings, volume of excavation required to remove culverts, culvert/stream channel size, and stabilization of unstable fills.

- One time storage costs (from ML2 to ML1) are the lowest when no culverts need to be removed, but there is an additional annual maintenance cost for storage and a re-opening cost (from ML1 to ML2). Storage costs include the installation of waterbars and an earthen berm road closure barrier.

- Routine maintenance includes brushing, blading, ditch and culvert cleaning, spot rock or pavement maintenance on varying cycles depending on maintenance item.
- Closed road costs assume inspection on foot to monitor for resource damage and road stability, and replacement or reestablishment of barricades at a 5 year interval.

Projected Road Maintenance Costs

In analyzing the road system and looking at potential ways to reduce the maintenance budget, the forest mainly looked at reducing the operational maintenance level of road segments that would also limit the impact to both forest users and mission critical work. One scenario has been developed to illustrate the cost of maintaining the existing level of roads open for passenger car use compared to a system with a smaller percentage of roads open for passenger car use. This scenario doesn't change the cost of maintenance per road maintenance level. This scenario drops all maintenance level 5 roads to maintenance level 4. In reviewing the maintenance level 4 roads, there weren't many viable candidates for reduced maintenance level that didn't also have significant impacts to the public. The other main change in this scenario was to significantly reduce the number of maintenance level 3 and 2 roads. This change results in fewer roads maintained for high clearance vehicle use. Thus some high clearance roads would be left unmaintained and would eventually become impassable or would need to be closed for safety or resource concerns. Site specific planning decisions that were made in the past would be implemented to reduce the overall mileage of system roads. The results of this scenario are summarized in the tables and figures beginning on the following page.

There are approximately 90 miles of road currently on the Chugach National Forest System. The proposed road system is based on objective maintenance levels shown on the roads list from the 2002 analysis and updated with the changes evaluated in this addendum. See Table 2 below.

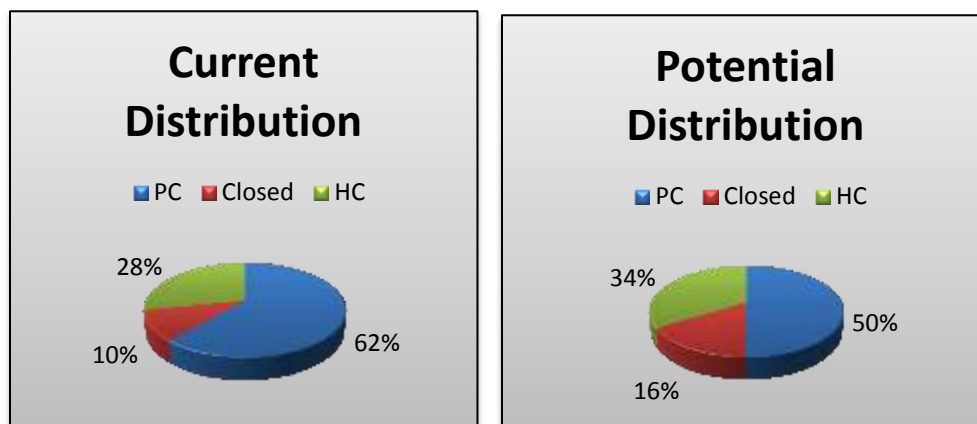
Table 2. Change in Annual Maintenance Costs

OPML	Current				Proposed		
	Miles	% of sys	Cost		Miles	% of sys	Cost
5	0.24	0%	\$6,117		0.00	0%	\$0
4	10.48	12%	\$191,817		10.72	12%	\$196,284
3	44.24	49%	\$276,956		34.24	38%	\$214,350
2	25.36	28%	\$92,645		30.36	34%	\$110,914
1	9.25	10%	\$2,545		14.25	16%	\$3,921
	89.56	100%	\$570,081		89.56	100%	\$525,469

As noted above in Table 2, the changes in maintenance level result in significant annual savings. However, the cost of maintaining the system still exceeds the current budget situation, but is trending towards the average available funding shown in Table 1. Figure 1 below better illustrates the overall changes to the road system.

Figure 1. Potential Maintenance Level Changes

PC: Passenger Vehicle, HC: High Clearance Vehicle



Further analysis needs to be done to find ways to get the maintenance needs of the system more closely aligned with the annual allocation.

Conclusions

The results of the Financial Analysis show that there are opportunities for identifying a future system of roads where “average annual funding” is reasonably in balance with the “average annual cost of routine road maintenance”. However, the forest needs to consider other aggressive strategies for further reducing the annual maintenance costs.

Recommendations

By utilizing the priorities identified in the 2002 Roads Analysis Report and this addendum, the CNF can focus limited road maintenance resources, and any potential capital funds, to the most important roads necessary for management and enjoyment of the National Forest, and to the roads with the highest need for mitigation work associated with environmental risks. To do so, the Forest should consider the following:

- Focus available maintenance funding and resources on the highest priority roads, (address issues related to user safety first, then on repair/prevention of resource issues)
- Focus any available capital funds toward improvement work on high use roads with high environmental risks.
- Prioritize funding for roads to be closed or decommissioned based on those with the highest environmental risks.
- Seek new and additional funding sources for road maintenance and improvements through any available funding programs such as Capital Investment Programs, Legacy Roads and Trails, Forest Highway Administration Programs such as MAP-21, and Secure Rural Schools Resource Advisory Committee (RAC).

- Seek partnership opportunities to help leverage funds from outside sources, such as Native villages and corporations
- Seek opportunities to transfer jurisdiction of FS roads to other agencies.
- Continue to look for ways to reduce maintenance costs, and overhead costs related to Forest Service road programs, so as to direct more funds directly to road maintenance and improvement work.